

## **REMARKS/ARGUMENTS**

### **Background and Current Status**

This Amendment is made in response to the final Office Action dated February 3, 2009. The Office Action has been carefully reviewed, and the following remarks herein are considered responsive thereto.

Claims 1–3 and 5–26 were examined and are pending in this application, prior to entry of this Amendment (claim 4 having been canceled by a previous Amendment). New independent claims 27 and 32 have been presented, and independent claim 24 has been amended by this Amendment to overcome the bases of rejection asserted in the Office Action and further to place the claims in condition for allowance. Additionally, dependent claims 2–3, 6–22, and 25–26 have been amended, primarily to conform these claims to the amendments made to the independent claims. Claims 1, 5, and 23 have been canceled by this Amendment. New dependent claims 28–31 have been added by this Amendment.

It is submitted that no new matter is presented by this Amendment, as all claim amendments and new claims are properly supported by the application as originally filed. This Amendment is believed to have corrected all deficiencies so that a Notice of Allowance can be promptly issued.

### **Basis for Allowance of Amended Claims**

#### *35 U.S.C. § 101 Rejection*

In the Office Action, claims 1–23 were rejected under 35 U.S.C. § 101 on the grounds that the claimed methods were allegedly directed to non-statutory subject matter. Specifically, the Office Action asserted that claims 1–23 were directed to identifying optimum product configurations, but are not sufficiently tied to a particular machine.

According to the recently-decided *In re Bilski* decision (and as recited in the Office Action), in order for a claimed process to be considered patent-eligible subject matter under 35 U.S.C. § 101, the process must either (1) be tied to a particular machine or apparatus, or (2) transform a particular article to a different state or thing. [*In re Bilski*, 545 F.3d 943, 954 (Fed.

Cir. 2008) (citing *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972))). Applicant asserts that the present claims, both new and as amended, are sufficiently tied to a particular machine, and thus withdrawal of the 35 U.S.C. § 101 rejection of the claims is respectfully requested. (Applicant has not herein addressed whether the present claims transform a particular article to a different state or thing, as only one of the two *In re Bilski* factors must be met in order for the claims to qualify as patent eligible subject matter.)

Specifically, independent claims 1 and 23 have been canceled, but new independent claims 27 and 32 have each been drafted to recite “a computerized system” comprising, among other components or functions, a “processor,” a “database,” and a “computer readable medium that is usable by the processor and is operatively coupled to the database.” These claim amendments clarify that the processes described in claims 27 and 32 are carried out in a computerized system including various computer components, and are thereby tied to particular machines. The *In re Bilski* decision left open the question of whether a computer suffices as a particular machine, stating “[w]e leave open to future cases the elaboration of the precise contours of machine implementation, as well as the answers to particular questions, such as whether or when recitation of a computer suffices to tie a process claim to a particular machine.” [*Id.* at 962]. Accordingly, because the *In re Bilski* court purposefully left open the question of whether a tie to a computer or specific computer components is sufficient to satisfy the “particular machine” inquiry, it is improper to reject new independent claims 27 and 32 under 35 U.S.C. § 101. Further, because dependent claims 2–3, 6–22, 25–26, and 28–31 merely add additional limitations and details to independent claim 27, it is submitted that the rejection of these claims should also be withdrawn. Support for these amendments may be found in the originally-filed specification on page 11, lines 4–6; page 26, line 3; page 30, lines 6–7; and in other locations not specifically mentioned. Further, one of ordinary skill in the art at the time the invention(s) recited in the application were made would have understood and appreciated that computers and computerized systems include conventional system components, such as processors, databases, etc.

*35 U.S.C. § 103 Rejection*

In the Office Action, claims 1–26 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Brunner et al.* (U.S. Pat. No. 7,386,832) and *Kapadia et al.* (U.S. Pat. No. 7,039,602) in further view of *Schierholt* (U.S. Pat. Pub. No. 2005/0149377), *Balasinski* (U.S. Pat. No. 7,231,374), and *Walker et al.* (U.S. Pat. No. 7,347,364). In response to these rejections, Applicant has presented new independent claims 27 and 32, and amended and clarified independent claim 24, to highlight more clearly how and why the present invention(s) are patentably distinguishable from the teachings of the cited references, whether those references are taken alone or in combination. Accordingly, Applicant submits that the 35 U.S.C. § 103(a) rejections of the present claims are now moot. However, in the interest of providing a full and complete response to the Office Action, Applicant presents the following arguments and remarks.

The primary reference relied upon in the Office Action, *Kapadia*, teaches a conventional “configurator” system that enables a consumer to configure (i.e., select features and options of) a product on a per-feature basis while the product is being purchased. Essentially, *Kapadia* describes a product ordering engine that suggests certain “default” (or preferred) features or options that a seller would like to “push” or recommend that a purchaser choose. Such recommendations are made to the purchaser based on the seller’s desired goals and based on previous features selected by the purchaser during a current and specific product order of the purchaser. [*Kapadia*, Col. 3, lines 34–58]. Thus, *Kapadia* does not address and has no reason to address or identify a subset of optimized product configurations for a product that a manufacturer should make or that a retailer should offer for sale from a much larger set of all possible product configurations in advance of any offer for sale to a customer. [*Id.*, Col. 9, lines 43–60]. Further, the system described in *Kapadia* has no reason to analyze or make use of historical or synthetic demand data, whether purchasers would be willing to accept certain upgrades or substitutions of a product feature, and other similar types of information, because *Kapadia* is merely directed to interacting with an end-user customer during the order process and trying to push or encourage the purchaser to move toward a particular product configuration, but only by suggesting or

recommending specific product features or options over others during a singular product ordering session to achieve a goal for that particular order.

In contrast to *Kapadia*, and the other references of record, new claim 27 recites a computerized system for generating an optimum subset of product configurations from a plurality of possible product configurations associated with a product, wherein the product includes a plurality of features, each feature including a plurality of selectable options, comprising: a processor; a database for storing product configuration data and historical demand data associated with the plurality of possible product configurations, wherein each product configuration includes a plurality of options selected from the plurality of features; and a computer readable medium that is usable by the processor and is operatively coupled to the database, the medium having stored thereon a sequence of instructions that when executed by the processor causes the execution of the steps of: receiving product configuration data from the database representative of the plurality of possible product configurations; based on the received product configuration data, representing each product configuration in the plurality of possible product configurations as a multi-dimensional feature array in a possible product configuration space, wherein each array identifies the options associated with its respective product configuration; applying mix-and-match rules to the multi-dimensional feature arrays in the possible product configuration space to define a plurality of valid multi-dimensional feature arrays in a valid product configuration space representing valid product configurations as a subset of the plurality of possible product configurations; receiving historical demand data from the database for the valid product configurations, the historical demand data including a demand value for each respective option of each respective feature associated with each valid product configuration; analyzing the valid product configuration space via an optimization model to generate an optimum subset of valid product configurations from the plurality of valid product configurations based on a desired objective and the received demand values associated with each of the valid product configurations, wherein each valid multi-dimensional feature array in the valid product configuration space is analyzed prior to generating the optimum subset of valid

product configurations; and outputting the generated optimum subset of valid product configurations that satisfy the desired objective.

Applicant asserts that neither *Kapadia*, *Schierholt*, *Brunner*, or any of the other cited references, when taken alone or in combination, teaches, discloses, or suggests the computerized system as recited in new independent claim 27. Specifically, claim 27 clarifies that each valid product configuration is represented as a multi-dimensional feature array in a valid product configuration space, and the valid product configuration space is analyzed such that each valid multi-dimensional feature array in the valid product configuration space is analyzed prior to generating the optimum subset of valid product configurations. Support for this new claim may be found in the originally-filed specification on page 7, lines 1–11; page 21, lines 29–34; page 24, lines 25–30; and in other locations not specifically mentioned. Essentially, claim 27 indicates that every possible feature and option of all valid product configurations are analyzed before an optimum subset of product configurations are generated. This new claim recites functionality that is in stark contrast to *Kapadia*, which only optimizes singular features of a particular configuration based on an end user's selection of features during a specific purchase of the particular configuration. Specifically, the system described in *Kapadia* presents each feature to the user on a feature-by-feature basis, such that a default option within the particular feature may be suggested to the user based on some optimization goal. *Kapadia* clearly states that “the preferred technique provides for optimization of each selection step independently.” [*Id.*, Col. 9, lines 56–58, (emphasis added)]. In this way, as a user selects features for a given product configuration, the system of *Kapadia* determines a default option to suggest to the user when the next feature list of the given product configuration is presented. The system of *Kapadia* does not consider all features of all of its products collectively, but instead considers only one feature at a time while a user makes selections to arrive at one valid product configuration.

In fact, *Kapadia* explicitly teaches away from optimizing or considering all options and features associated with a product configuration or group of product configurations before offering a configuration to a consumer. *Kapadia* states that “[g]enerally, it will not be desirable to perform a complex calculation of all possible item combinations to select the one leading to [a

desired objective],” and that “[t]his would complicate the optimization calculation by adding product configuration restraints . . .” [*Kapadia*, Col. 9, lines 51–55, (emphasis added)]. *Kapadia* goes on to state that “[i]t is not necessary, or in some cases **even possible**, for perfect optimization to be calculated for each item set . . .” [*Id.*, lines 43–44, (emphasis added)]. In contrast, the present invention(s), as set forth in the new and amended claims herein, are specifically directed to systems for analyzing and optimizing a valid product configuration space including all valid product configurations as a whole, not merely one feature at a time, to generate an optimum subset of product configurations that maximizes profit, reduces cost, or meets some other desired objective. In this way, the present claims are directed to methods that *Kapadia* openly defines as complicated, undesirable, and in some cases, impossible. In sum, the system described in *Kapadia* does not and cannot consider the universe of all possible product configurations simultaneously before an optimum subset of configurations are identified, and none of the cited references teach, disclose, describe, or suggest representing product configurations in a product configuration space to achieve such a simultaneous optimization.

Further, as asserted by the Applicant in a previous Amendment (filed October 29, 2008), there are several additional differences between the invention(s) described in the present claims and the system described in *Kapadia* (and other similar configurator systems). For example, *Kapadia* does not teach representing each product configuration capable of manufacture or sale by a company as a multi-dimensional array for purposes of optimization or analysis, as recited in the present claims. At best, *Kapadia* may be read to suggest representing a particular feature of a product as a list of options, which is not the same as representing an entire product configuration as an array, wherein the array includes a plurality of features associated with a plurality of options. [see *Kapadia*, Col. 6, lines 11–23]. Also, *Kapadia*’s “optimization” (i.e., suggesting default features to a system user) occurs “on the fly” as each product feature is selected (specifically, *Kapadia* recites that the “default selection . . . is determined at the time a selection list is presented to the user,” and that “[t]he user is always free to select any item from the available list.” [*Id.*, Abstract, Col. 6, lines 65–66, (emphasis added)]), whereas the present claims suggest analyzing a product configuration space to generate an optimum subset of product

configurations to achieve a desired objective before those configurations are manufactured or offered for sale to an end user. For the sake of brevity, Applicant has not repeated in detail herein the nuances and details of all of the differences between the present claims and *Kapadia*, but the Examiner is able (and is urged) to review these arguments in the previously-filed Amendment of October 29, 2008.

Additionally, the Office Action relies upon *Schierholt* as a secondary reference to supply the missing teachings from *Kapadia* regarding receipt and subsequent use of historical demand data associated with each of the valid product configurations. *Schierholt* describes an adaptive pricing system for optimizing profit in a supply chain environment by dynamically varying the price of a product based on supply or availability of the product. Specifically, the system in *Schierholt* involves monitoring the demand and allocation reservations for products over time, comparing monitored product demand to forecasted demand, and updating or changing product pricing or material allocation reservations based on changes in product demand. [*Schierholt*, Paras. 8, 10, 13, 42, and 46]. In this way, *Schierholt* merely describes a system for raising or lowering prices of products and/or moving the locations of materials needed to manufacture those products in response to increases or decreases in customer demand.

In contrast to *Schierholt*, the present independent claims describe receiving historical demand data from a database for valid product configurations, wherein the historical demand data includes a demand value for each respective option of each respective feature associated with each valid product configuration. The demand values are then used in conjunction with an analysis of the valid product configuration space to generate an optimum subset of valid product configurations. Support for these amendments may be found in the specification on pages 29–31, and in other locations not specifically mentioned. As described in the present specification, demand is determined at the configuration level using the “history of demand by feature and option.” [Specification, Page 30, lines 14–15, (emphasis added)]. Essentially, the present invention(s) determine demand for each specific option of each feature, and then uses that demand to generate an optimum subset of valid product configurations based on the options associated with each configuration.

*Schierholt* simply does not teach, disclose, or suggest utilizing historical demand data for each valid product configuration based on historical demand of each option of each feature in each product configuration, irrespective of current or monitored demand or sales data. The cited portions of *Schierholt* describe “monitoring product demand and allocation reservations for product components, comparing the product demand and component allocation reservations with demand forecasts at predetermined intervals, [and] dynamically assigning component allocations for preferred customer segments according to a comparison of the forecasted and monitored demand . . .” [*Schierholt*, Paras. 8, 10, and 13]. In this way, *Schierholt* suggests a system wherein demand for a particular product is monitored, and based on that demand, parts used to make the product are allocated to varying locations in a supply chain. Applicant admits that *Schierholt* does describe monitoring product demand generally, but does not recite utilizing product demand data at the option level for a plurality of valid product configurations having a plurality of options to identify the optimum subset of valid product configurations that meet a desired objective. Thus, because the historical demand data and its subsequent use in the present claims is much different than simply “monitoring product demand”, as described in *Schierholt*, it is inappropriate to use *Schierholt*, either alone or in combination with *Kapadia* or any of the other references of record, to support a 35 U.S.C. § 103 rejection of the present, amended claims.

Further, even if *Schierholt* did teach the “per option” demand described in the present claims, there is no teaching, suggestion, or motivation to combine *Schierholt* with *Kapadia* (or any other cited reference), as *Kapadia* has no use for such demand information. As mentioned previously, the system described in *Kapadia* suggests default selections to system users based on desired objectives, such as maximizing profit (i.e., offering products with highest profit margin) or reducing inventory. *Kapadia*’s novelty and teaching lies in the fact that the configurator makes recommendations or suggestions to the purchaser during the configuration process based on desired goals or objectives of the seller. The system in *Kapadia* has absolutely no use for historical demand data representing past sales of products, as the system’s optimization is purely focused on suggesting a default feature to a particular customer during a particular order of a product.



Regarding new independent claim 32, Applicant asserts that none of *Kapadia*, *Schierholt*, or *Brunner*, when taken alone or in combination, teaches, discloses, or suggests a computerized system for generating an optimum subset of product configurations from a plurality of possible product configurations associated with a product capable of being manufactured by a company, wherein the product includes a plurality of features, each feature including a plurality of selectable options, comprising; a processor; a database for storing product configuration data and historical demand data associated with the plurality of possible product configurations, wherein each product configuration includes a plurality of options selected from the plurality of features; and a computer readable medium that is usable by the processor and is operatively coupled to the database, the medium having stored thereon a sequence of instructions that when executed by the processor causes the execution of the steps of: receiving product configuration data from the database associated with the plurality of possible product configurations, the product configuration data including a cost to manufacture by the company and a revenue value to the company for each product configuration in the plurality of possible product configurations; based on the received product configuration data, representing each product configuration in the plurality of possible product configurations as a multi-dimensional feature array in a possible product configuration space, wherein each array identifies the options associated with its respective product configuration; applying mix-and-match rules to the multi-dimensional feature arrays in the possible product configuration space to define a plurality of valid multi-dimensional feature arrays in a valid product configuration space representing valid product configurations as a subset of the plurality of possible product configurations; receiving historical demand data from the database for the valid product configurations, the historical demand data including a demand value for each respective option of each respective feature associated with each valid product configuration; analyzing the valid product configuration space via an optimization model to generate an optimum subset of valid product configurations from the plurality of valid product configurations based on: (i) a desired objective of the company, (ii) the cost to manufacture of each valid product configuration, (iii) the revenue value of each valid product configuration, and (iv) the received demand values associated with the options of each valid product configuration,

wherein each valid multi-dimensional feature array in the valid product configuration space is analyzed simultaneously before generating the optimum subset of valid product configurations; and storing the generated optimum subset of valid product configurations in the database that satisfy the desired objective, whereby the generated optimum subset of valid product configurations are subsequently manufactured by the company.

Applicant submits that all arguments presented above in association with new independent claim 27 apply equally to new independent claim 32. Applicant additionally points out that claim 32 is specifically directed to product configurations that should be manufactured by a company, and that historical demand data, costs to manufacture, and revenue values are taken into account simultaneously for all valid product configurations before the optimum subset of valid product configurations is generated. Support for these amendments may be found in the specification on pages cited previously in conjunction with claim 27; on page 27, lines 1–15; and in other locations not specifically mentioned. As mentioned previously in detail, neither *Kapadia* nor any of the other cited references consider all product configurations simultaneously before determining an optimum subset of product configurations for subsequent manufacture. Thus, because the elements of claim 32 are not taught, disclosed, described, or suggested in any of the references of record, Applicant respectfully requests allowance of this claim.

Regarding independent claim 24, Applicant asserts that none of *Kapadia*, *Schierholt*, or *Brunner*, when taken alone or in combination, teaches, discloses, or suggests a computerized system for generating an optimum subset of valid product configurations associated with a product, comprising: a configuration generator for receiving product configuration data, the product configuration data representative of all possible product configurations, each product configuration defined by a plurality of options selected from a plurality of features, the configuration generator applying mix-and-match rules to identify a set of valid product configurations from all possible product configurations, the configuration generator further representing each of the valid product configurations as an ordered array in a valid product configuration space; a demand simulator for receiving historical demand data associated with all possible product configurations and calculating relative demand for each of the valid product

configurations based on historical demand data associated with each option of each feature of the valid product configurations; a cost calculator for calculating and associating a cost of manufacture for each of the valid product configurations; a revenue calculator for calculating and associating a revenue potential for each of the valid product configurations; an objective-based modeler for defining an optimization model and for receiving product configuration information from the configuration generator, the demand simulator, the cost calculator, and the revenue calculator; and an optimization engine for solving the optimization model based on the received product configuration information and generating the optimum subset of valid product configurations from the set of valid production configurations in the valid product configuration space, and for generating costs, revenue, and parts needed for the optimum subset of valid product configurations.

Applicant submits that all arguments presented above in association with new independent claims 27 and 32 apply equally to the 35 U.S.C. § 103(a) rejection of claim 24. Applicant additionally submits that *Kapadia* fails to teach, suggest, or describe the “cost calculator” or “revenue calculator” elements (among others) of independent claim 24, as asserted in the Office Action. Specifically, in the Office Action, it is asserted that Col. 6, line 56 through Col. 7, line 2, and Col. 7, lines 13–30 of *Kapadia* teach or suggest the claim element of a cost calculator for calculating and associating a cost of manufacture for each of the valid product configurations. However, there is no discussion in *Kapadia* of a cost calculator that calculates a cost of manufacture for each valid product configuration, and then associates that calculated cost of manufacture with its respective product configuration for further use within the system (as described in claim 24). In fact, the cited portions of *Kapadia* merely teach applying an optimization function to the selection of default items within a feature list, and in no way mentions calculating or associating a manufacturing cost with those items, much less with an entire product configuration or set of product configurations. Accordingly, *Kapadia* fails to teach, disclose, suggest, or contemplate the cost calculator described in the present claims.

Further, the Office Action asserts that Col. 7, lines 38–44 of *Kapadia* teach the claim element of a revenue calculator for calculating and associating a revenue potential for each of the

valid product configurations. While *Kapadia* does generally discuss determining a “profit number” for each item in a feature list, it does not contemplate a revenue calculator for calculating and associating a revenue potential for each valid product configuration. Again, *Kapadia* only contemplates analyzing features in a configuration on a per-feature basis as a configuration is ordered by a customer. *Kapadia* does not (and admittedly, in some circumstances, cannot) calculate a revenue potential for each valid product configuration of a set of all possible product configurations. Thus, again, *Kapadia* simply fails to teach, disclose, suggest, or contemplate the revenue calculator described in the amended independent claim 24.

For the sake of brevity, Applicant has not addressed each and every assertion made in the Office Action, particularly regarding *Brunner* and the other references of record. However, Applicant submits that, based at least on the new claims, amendments, and arguments presented above, none of the cited references, whether taken alone or in combination, teach, disclose, or suggest the elements described in the present independent claims. Thus, Applicant respectfully requests that the 35 U.S.C. § 103 rejection of these claims be withdrawn.

Further, although not specifically addressed above, because independent claims 24, 27, and 32 are allowable over the cited references, it is respectfully submitted that all of their dependent claims, which merely add further limitations or details to each independent claim from which they depend, are equally allowable for the same reasons described above.

It is believed that the foregoing amendments and arguments have addressed all of the claim rejections in the Office Action, and have thus placed all pending claims in condition for allowance. Such allowance is earnestly and respectfully solicited.

### Conclusion

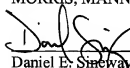
Based on the amendments presented herein and based on the remarks set forth above, it is respectfully submitted that none of the cited references, whether taken alone or in combination, teach, discuss, suggest, contemplate, or require all of the steps or elements of the newly-presented and amended independent claims. In light of the amendments and remarks presented above, reliance upon the references of record to support a 35 U.S.C. § 103 rejection of the claims

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is unwarranted. Therefore, newly-presented independent claims 27 and 32, and amended claim 24, clearly define over the references of record, and now stand in appropriate condition for allowance. Likewise, it is respectfully submitted that each of the dependent claims, which merely include further limitations or details to each independent claim, is allowable for the same reasons the independent claims are allowable.

Finally, please note that the current Amendment includes 27 total claims and 3 independent claims. Because Applicant previously paid for 25 total claims and 3 independent claims, additional claims fees for two (2) new dependent claims are believed due. Further, this Amendment is filed in conjunction with a Request for a One-Month Extension of Time to Respond, as well as a Request for Continued Examination, and the associated fees. If our assessment of additional claims fees or any other fees due is in error, please charge any fees that might be due or credit any overpayment to our Deposit Account No. 50-3537. It is now believed that the application and all of the amended claims submitted herein are now in condition for allowance and such allowance is respectfully requested.

Respectfully submitted,  
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